

Division of Supervision

MEMORANDUM SYSTEM

Classification Number		6370
Date		May 16, 1996
Issuing Office		DOS/Automation
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TO: Regional Directors

FROM: Nicholas J. Ketcha Jr.
Director

SUBJECT: Electronic Banking Activities - Overview of On-line Banking

1. Purpose. This memorandum provides general information about on-line banking activities and related supervisory issues.

2. Background. The attached narrative, "Overview of On-line Banking," explores on-line banking activities that are presently taking place in the industry. Risks and supervisory implications are identified; however, the purpose of the paper is to present an overview of what the banks are currently offering. At present, over 200 banks have a presence on the World Wide Web. The vast majority of these sites represent informative advertisements. However, several banks are offering on-line account applications, and at least two institutions allow customers to view account data over the Internet. One bank, Security First Network Bank, FSB, permits on-line transactions, and two others have announced their intentions to permit on-line transactions by August 1996.

A growing number of banks offer computer-based home banking programs which operate over closed networks (dial-in connection between the customer and the bank's data processor). Twenty-nine banks have entered into agreements with either Intuit, Inc. or Microsoft Corp. (or both companies) to offer on-line banking with the Quicken and Money software programs. Several other banks use proprietary home banking programs that are customized for the institution or maintain a banking site with a commercial on-line service such as America Online or Prodigy.

From a safety and soundness perspective, security represents the greatest concern with on-line banking programs. The risks associated with on-line banking vary tremendously depending upon whether a bank is simply maintaining an informative site, or if transactions are permitted. This risk is high in the case of open networks (the Internet) and lower in the case of closed networks. It is vitally important that bankers recognize and appropriately manage the risks inherent in their on-line banking activities. Furthermore, technology associated with on-line banking is dynamic, resulting in an ever changing risk environment. Summaries of selected banks and their on-line activities are provided in Appendix I and Appendix II.

3. Action. Examination procedures are being developed that will address the wide variety of on-line banking activities. Such procedures will likely include work programs and modules which are targeted at certain types of activities. Pending the availability of examination procedures, examiners should be aware of the growing involvement of FDIC supervised banks in on-line activities. The extent of a bank's on-line activities and the related risks should be identified and considered in the course of the examination process.

Please forward a copy of this memorandum to regional office and field personnel. Current information regarding electronic banking will be published on the Division of Supervision's Internet home page (<http://fdic01/dos>). The site will be updated as new information becomes available and examiners are encouraged to view it periodically. The DOS home page can be accessed using Netscape browser software which will be available to all regional and field offices by the end of the second quarter 1996.

**Examiners encountering financial institutions offering on-line banking transactions should e-mail a brief summary of the services offered by the bank to the following address:
Cynthia A. Bonnette Detail@DOS FSt@Washington.**

**Attachment
Trans. Number**

OVERVIEW OF ON-LINE BANKING

Executive Summary

On-line banking involves the use of a personal computer (PC) to conduct remote banking activities. PC banking programs can be conducted over closed or open networks, which involve different risks and business strategies. Closed networks involve a dial-in connection between the customer and the bank's data processor which provides greater system security, but may limit the bank's flexibility and control over the user interface. Examples of closed network programs include home banking products developed by Intuit (Quicken), Microsoft (Microsoft Money), and MECA Software (Managing Your Money) as well as proprietary products developed by financial institutions. Reference is made to Appendix I and Appendix II for examples of banks which offer closed network home banking programs.

Open networks offer greater flexibility and access, but lack security. The Internet is an open network which has become increasingly popular as a global communication channel. Banks are currently exploring the Internet as a potential low cost delivery mechanism for financial services. Since it is an open network, use of the Internet involves greater risk of information being intercepted, read, and potentially altered by an outside party. Therefore, risks associated with on-line banking programs which involve the Internet must effectively address this heightened security risk. As of April 5, 1996, over 200 insured U.S. banks had established a presence on the World Wide Web with a home page. The vast majority of these sites are strictly informational and are not used to facilitate transactions. Several banks use their informative Web site to refer customers to their closed network home banking program.

Regardless of the closed or open network over which they communicate, on-line banking programs share a number of common risks and raise a variety of supervisory issues. Security risks are clearly greater for programs which permit transactions over the Internet; however, even closed network programs are subject to risks of insecure telephone connections and password violations. Audit and control features must be in place which are appropriate for the degree of risk inherent in each system. Furthermore, many banks rely on third parties for a variety of functions related to on-line banking including Web site maintenance, software development, and bill payment services. When important functions are performed outside of the bank, management must ensure that proper controls are maintained by the servicer and addressed in the contract.

In order to address the supervisory implications associated with on-line banking and other emerging banking technologies, the FDIC has formed the New Banking Technologies Task Force. The task force is charged with coordinating the efforts of the various divisions with respect to new banking technologies. In addition to its participation on the task force, the Division of Supervision and has initiated a number of activities. The on-line banking activities of insured banks are being researched and monitored. Procedures for maintaining a database and tracking future developments are being considered. Furthermore, DOS' findings and observations will be documented in memoranda such as this and posted to the FDIC's internal Web site for comments and input. As the full extent of the risks associated with on-line banking activities are identified, appropriate supervisory policies and examination procedures will be recommended.

Definition of On-line Banking

For the purposes of this analysis, on-line banking is defined as the use of a personal computer (PC) for the purpose of conducting banking activities from a remote location. A broader definition might also include the use of screen telephones and interactive televisions to conduct remote banking functions. On-line PC banking can be further broken down into two distinct categories: (1) programs which involve closed networks that directly link the customer to the bank's data processor, and (2) programs which involve open networks such as the Internet. The difference between closed and open network programs is significant and the risks inherent in each category are varied.

Closed Network PC Banking

PC banking programs which utilize a closed network have become quite widespread and are offered by numerous banks having a wide range of asset sizes and business strategies. These programs require that the customer have access to a personal computer and a modem. The customer purchases or is provided with a software program that allows him/her to dial into the bank's system via a modem. The customer and the bank (or its data processor) are connected directly over telephone lines. Once connected, the customer can download account data for reconciliation and conduct a variety of transactions with the bank including bill payment and intrabank funds transfer.

Home banking programs can be either developed and customized for a particular bank or licensed from firms such as Microsoft Corp. and Intuit, Inc. When deciding whether to develop customized home banking software or license a popular program such as Microsoft's Money or Intuit's Quicken, the bank must consider and balance issues pertaining to flexibility and control over the user interface (the screens that customers see). The growing involvement of non-bank companies in providing home banking programs also raises competitive and strategic issues. Currently, the major players include Intuit, Microsoft, and MECA Software (a joint venture of NationsBank and Bank of America). Thirty-four banks are working with either one or more of these three firms. Commonly, a bank will offer their customers a choice between software programs.

A few banks have entered into agreements with major on-line service providers such as America Online, Prodigy, and CompuServe, to provide banking services on these networks. In January of 1996, Bank of America announced an agreement with America Online to establish a banking site. Citibank and Wells Fargo Bank have made a similar arrangement with Prodigy. These on-line systems are characterized as closed networks since they provide a direct connection between the customer and the bank's data processor.

The fact that these PC banking programs utilize closed networks limits the degree of risk involved with this activity. The customer has a direct dial-in connection with the institution or data processor which reduces security and privacy concerns. The customer uses a password which the bank relies upon to verify the identity of the user. Generally, the most significant risks associated with these programs involves the integrity of the telephone connection and passwords which are used to access the system. The bank's degree of control over the program and potential liability will depend upon the contracts between the institution and its software provider or commercial on-line service. Other business risks which are present, but less significant to regulators, include the potential loss of control over the user interface which places the bank at a competitive disadvantage and transfers a major stake in the banking relationship to the provider of the software program.

Open Network PC Banking

The Internet has become an increasingly popular communication medium, and several banks are investigating its use as a delivery channel for banking services. The Internet is an open network which links a multitude of computer systems across the world and connects over 30 million users. This vast linkage of networks was developed to facilitate communication and lacks provisions for security. Depending upon how a bank uses the Internet, it faces two primary risks: (1) the risk that information which passes over the open network of the Internet can be intercepted, read, and potentially altered by an outsider, and (2) the risk that linkage to the Internet can leave the bank's computer system vulnerable to unauthorized access. These risks must be properly addressed in order for a bank to use an open network to permit customers to conduct banking transactions.

Banks are presently using the Internet in a variety of ways which involve a broad range of risks. The most common use is the establishment of a "home page" on the World Wide Web for advertising and informational purposes. The risks associated with an informational home page are generally nominal. However, a number of issues arise when a bank sets up a home page. First, there are consumer protection issues such as advertising and disclosure. The bank's home page should be reviewed by consumer protection and legal staff to ensure that all information posted meets regulatory disclosure

requirements. Second, if the bank's internal systems are linked to the system that supports the Web site, the bank's computer system is vulnerable to unauthorized access. Security firewalls must be maintained to protect the bank's system. In many cases, a bank will use a third party to establish and maintain the Web site, thereby avoiding any connection to the bank's internal system and eliminating the risk of invasion. The complexity of Web site set up and maintenance varies from bank to bank.

The level of risk increases substantially once a bank engages in actual transactions over the Internet. The bank faces both risks (1) and (2) noted above, and must establish measures to protect customer data and secure transactions. Technology in this area is developing rapidly, and a few banks have implemented systems which appear to satisfactorily address these concerns. In general, these systems address risk (1) with encryption and authentication technology and risk (2) with firewall protection and secure operating systems. However, with rapidly advancing technology, these banks must continually reassess their Internet security system.

In a strategic sense, on-line banking over the Internet allows the bank greater flexibility and control over the user interface. The screens for home banking programs currently marketed by Intuit and Microsoft are predetermined by the vendor. Even customized programs may be difficult to modify since the software must be updated and then distributed to customers. However, a bank which uses the Internet controls the interface on their Web server and can customize or modify it at any time. Currently, there are approximately 200 banks which have established a site on the World Wide Web; however, only Security First Network Bank, FSB, Pineville, KY, actually permits customers to conduct transactions over the Internet. Wells Fargo Bank, NA, San Francisco, CA, and First Union National Bank, Charlotte, NC, allow customers to access their accounts and view data over the Internet, but funds transfer is not permitted.

Combined Programs

A number of banks use a combination of open and closed networks in their on-line banking strategies. The most common example of this practice is a bank which maintains a home page on the World Wide Web for advertising purposes and refers potential customers to their closed network home banking programs. Customers might print out an account application from the Web site, but must send the application and initial deposit to the bank through the mail. The customer is then sent a package which includes the software program and initial account information. Once the software is installed, and a password is set up, the customer can dial directly into the bank's system and access their account.

Alternative Payment Systems

Several banks are developing alternative payment systems to facilitate commercial transactions over the Internet. Alternative payment systems such as electronic cash (e-cash), electronic checks (e-checks) and encrypted credit card transactions are being created as a secure means to transfer value between customers and merchants over the open network of the Internet. An example is provided by Mark Twain Bancshares, St. Louis, MO which has formed a partnership with DigiCash, Inc. to develop and offer "Ecash" to its customers.

An electronic version of the paper check is being developed by the Financial Services Technology Consortium (FSTC). The FSTC was created for the purpose of fostering Internet commerce, and its membership includes over thirteen financial institutions. A test of the electronic check was conducted by Bank of Boston and Chemical Bank in late 1995.

Several banks have formed partnerships with companies such as Reston, Virginia, based CyberCash, Inc., to participate in a variety of secure payment systems. The role of the bank may range from a transaction processing agent to a depository for agency accounts maintained by non-banks for the purpose of intermediating Internet transactions.

Risks of On-line Banking

Regardless of whether on-line banking is conducted over closed or open networks, a number of risks exist. Security remains a far greater concern for programs which involve open networks; however, closed network programs can still be vulnerable to insecure telephone connections, password violations, and system attacks. Programs involving open networks such as the Internet must address the two primary risks described above. Other risks include, but are not limited to, the following:

- **Financial privacy concerns** - The bank's responsibility to customers in the event of unauthorized account access can be unclear.
- **Blanket bond insurance** - The extent that blanket bond insurance will cover losses sustained from on-line banking activities must be determined.
- **Products and services** - Many products and services, such as mutual funds sales, may not be appropriate for on-line banking due to the need for comprehensive disclosures.
- **Non-bank competition** - Methods for identifying and monitoring the activities of non-bank firms and foreign institutions on the Internet need to be developed.

Other Supervisory Issues

On-line banking over both closed and open networks raises a number of issues which have bearing on supervisory efforts. Since on-line banking effectively allows customers to conduct banking activities across the country (and around the world) interstate and international laws come into question. Other concerns include the following:

- **Provisions of the Federal Electronic Funds Transfer Act (FRB Regulation E)** require modification to address on-line banking activities. (It is noted that the Federal Reserve recently published proposed revisions to Regulation E which address on-line disclosures.)
- **Compliance with the Community Reinvestment Act** is complicated by the global environment of the Internet.
- **The applicability of advertising and consumer disclosure requirements (Truth in Lending and Truth in Savings Laws)** must be considered with respect to banks' Web sites.

DOS Activities Related to On-line Banking

The Division of Supervision has taken several proactive measures to assess on-line banking activities in the industry and investigate the related risks and supervisory implications. DOS is presently involved in the following activities:

- **Participating in the FDIC's New Banking Technologies Task Force.**
- **Researching and monitoring the activities in which banks are presently engaging.**
- **Meeting with representatives of other FDIC divisions to discuss concerns, ideas and proposed actions.**
- **Meeting with representatives of other regulatory agencies to discuss issues and policy implications.**
- **Researching areas of risk for the purpose of recommending related policies, examination procedures, bank letters, etc.**
- **Moderating the FFIEC's April 1996 Symposium which will focus on on-line banking issues.** An audience of experienced interagency representatives will query a panel of industry experts, identify pertinent supervisory issues, and formulate policy recommendations for the respective agency heads.
- **Participating in the examination of Five Paces Software, the Internet software provider for Security First Network Bank, FSB**
- **Participating in the information systems examination of Intuit Services Corp.**

APPENDIX I - ON-LINE BANKING ACTIVITY DESCRIPTIONS

The following list provides a brief description of various on-line banking activities. The list is by no means all inclusive, but provides a sampling of the activities in which a number of banks are engaging. Each description is followed by a few banks which exemplify these activities. Each bank's address on the World Wide Web is provided in parentheses.

- **Informative Home Pages** - The vast majority of banks which maintain a home page on the World Wide Web provide information only. The extent of information provided varies from a simple page which displays the bank's name and logo, to more detailed pages which provide descriptions of products and services. Some sites provide economic forecasts, consumer advice, and a variety of other information.

American Security Bank, Louisiana (<http://www.mybank.com/asb-la>) - Informative home page displaying financial statements, in addition to product service and rate information.

Kingfield Bank, Maine (<http://www.maine.com>) - Informative home page with product and service information. Also provides information about the State of Maine.

Long Island Savings Bank, New York (<http://www.lisb.com>) - Informative home page with information about the bank's products and services.

Palm Beach Trust Company, California (<http://www.pbtrust.com>) - Informative home page with product and service information.

Republic National Bank, New York (<http://www.rnb.com>) - Informative home page with product, service, and corporate information.

- **Information and Applications** - The next level of activity involves banks which provide information about products and services on a home page, and allow customers to fill out on-line applications. For deposit accounts, the funds must be forwarded to the bank by mail or electronic funds transfer, but loan applications can be completed on-line (similar to applying for a credit card by phone).

Citizens Bank Online, Indiana (<http://www.cnbe.com>) - Allows customers to fill out applications for loans or deposits, but only if they reside within a defined geographic region (the bank's market area).

Crown Bank, Florida (<http://www.usdeposit.com>) - Promotes CD accounts; customers can apply for CDs on-line.

Douglas County Bank, Nebraska (<http://www.dcbt.com>) - Provides product and service information and allows on-line applications for loans and deposits.

First Union National Bank, North Carolina (<http://www.firstunion.com>) - Offers on-line credit card, personal loan, and home equity loan applications.

- **Information, Applications, and Transactions** - While a few banks permit customers to view their accounts and accept on-line applications, only Security First Network Bank currently permits transactions (such as funds transfer between SFNB accounts).

Security First Network Bank Kentucky (<http://www.sfnb.com>) - Provides on-line deposit account services and permits transactions. Plans to offer a wide range of credit products and other on-line services.

APPENDIX I - ON-LINE BANKING ACTIVITY DESCRIPTIONS (Continued)

Wells Fargo Bank California (<http://www.wellsfargo.com>) - Provides on-line account access to customers over the Internet. Customers can view account information, but transactions are not permitted. First Union National Bank offers similar account viewing options.

- **Other Activities** - A number of banks are engaging in a variety of activities which are linked to their Internet banking services. For example, First Union, Wells Fargo and Norwest Bancorp (<http://www.norwest.com>) offer access to a "virtual shopping mall" from their Web sites. In addition, certain banks such as Presidential Savings Bank (<http://www.presidential.com>) advertise mutual funds and provide links to affiliated investment and brokerage services.
- **Alternative Payment Systems** - Some banks are developing payment systems to facilitate Internet commerce. These systems include electronic cash, electronic checks, and secure (encrypted) credit card transactions.

Mark Twain Bancshares, Missouri (<http://www.marktwain.com>) - In partnership with the Netherlands based firm, DigiCash, Inc., Mark Twain offers "Ecash" which customers can use to pay for purchases over the Internet.

Financial Services Technology Consortium (<http://www.llnl.gov/fstc>) - The FSTC includes over thirteen banks in addition to non-bank participants who are interested in Internet commerce. One of FSTC's major projects is the electronic check. Bank members include Bank of America, Chase Manhattan, Bank of Boston, and Bank One.

- **Licensed Home Banking Programs** - Intuit, Inc., has agreements with 29 banks and Microsoft Corp. has agreements with 28 banks to offer home banking programs with the respective personal financial management software Quicken and Microsoft Money (most of these banks offer both programs). It is noted that Intuit recently announced an agreement with America Online (AOL) which will allow customers to access accounts at banks which offer Quicken home banking programs via AOL. In addition to Microsoft and Intuit, a company jointly owned by BankAmerica and NationsBank, MECA Software, provides the home banking program Managing Your Money. Fleet Financial Group, First Bank Systems, Inc., and Royal Bank of Canada have purchased ownership stakes in MECA, as well.
- **Proprietary Home Banking Programs** - Several banks offer customized PC banking programs which were developed specifically for the bank and involve closed networks similar to the programs using Quicken, or Money. Examples include the following banks which advertise these programs from their Web sites:

Bank of America, California (<http://www.bankamerica.com>)

Baybank, Massachusetts (<http://www.baybank.com>)

Citibank, New York (<http://www.citibank.com>)

Peoples Bank, Connecticut (<http://www.peoples.com>)

Salem Five Cents Savings Bank, Massachusetts (<http://www.salemfive.com>)

- **Other On-line Service Providers** - Bank of America recently announced an agreement with America Online (AOL) whereby BankAmerica will maintain an AOL area which will allow customers to directly access their accounts. Citibank, Barnett Banks, Banc One, and Wells Fargo have similar arrangements with Prodigy.

APPENDIX II - ON-LINE ACTIVITIES OF THE TOP 25 INSURED BANKS

	CLOSED NETWORK					OPEN NETWORK (Internet)			
BANK NAME/LOCATION	M/S - Money	Intuit - Quicken	MECA - MYM	Home Grown	On-line Provide r	WWW Page	E-Mail	View Accts	Conduc t Trans
Chase Manhattan Corp., NY, NY	●	●				●	●		
Citicorp, New York, NY		●		●	●	●	●		
BankAmerica Corp., San Francisco, CA			●	●	●	●	●		
NationsBank, Charlotte, NC			●			●	●		
J.P. Morgan and Co., New York, NY						●	●		
Bankers Trust, New York, NY						●	●		
Banc One Corp., Columbus, OH					●	●	●		
First Union Corp., Charlotte, NC	●	●				●	●	●	
First Chicago-NBD Corp., Chigago, IL	●	●				●	●		
Norwest Corp., Minneapolis, MN						●	●		
KeyCorp, Cleveland, OH*									
PNC Bank Corp., Pittsburgh, PA	●	●			●	●			
Bank of New York Co., New York, NY*									
Fleet Financial Group, Providence, RI			●			●	●		
Wells Fargo and Co., San Francisco, CA	●	●			●	●	●	●	
Bank of Boston Corp., Boston, MA	●	●				●			
Wachovia Corp., Winston-Salem, NC*									
SunTrust Banks, Inc., Atlanta, GA		●							
Mellon Bank Corp., Pittsburgh, PA	●	●				●	●		
Republic New York Corp., New York, NY		●				●	●		
Barnett Banks, Inc., Jacksonville, FL					●	●	●	●	
National City Corp., Cleveland, OH*									
Comerica, Inc., Detroit, MI					●	●	●		
Boatmen's Bancshares, Inc., St. Louis, MO					●				
CoreStates Financial Corp., PA	●	●			●				

* No on-line activities are reported as of the review date.

Notes: The list of top 25 banks is based on total corporate assets as of 12/31/95 with adjustments made for mergers completed through 3/31/96. The activity summary was determined based upon a review of the banks' Web sites during the week of April 1, 1996. These sites and the respective banks' on-line activities are dynamic, with new features and options being added or changed daily. Therefore, continued monitoring is warranted.